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10/040,558	01/05/2002	Chiun-Wen Hsu	02101-URSX	2465

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EXAMINER

LEE, RICHARD J

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/040,558

Applicant(s)

HSU, CHIUN-WEN

Examiner

Richard Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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1. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For examples:

(1) claim 1, line 7, "the vector displacement" shows no clear antecedent basis;

(2) claim 1, line 7, "estimate" should be changed to "estimating" for clarity;

(3) claim 1, line 9, "the vector displacement" shows no clear antecedent basis;

(4) claim 1, line 10, "above" should be deleted for clarity;

(5) claim 1, lines 13-14, the phrase "applying a median value filtering procedure upon the rebuilt visual frame" as claimed is vague and indefinite in that it is unclear what is meant by "upon the rebuilt visual frame". This phrase also shows no positive recitation in that it is unsure what the median value filtering is being applied to as claimed;

(6) claim 1, lines 15-16, the phrase "applying a spatial low pass filtering procedure upon the rebuilt visual frame, which has undergone the previous procedure" as claimed is vague and indefinite in that it is unclear what is meant by "upon the rebuilt visual frame, which has undergone the previous procedure". In addition, "the previous procedure" shows no clear antecedent basis and the phrase as a whole shows no positive recitation in that it is unsure what is the spatial low pass filtering is being applied to as claimed;

(7) claim 3, lines 3-7, the phrase "creating a first interpolation visual frame .... every visual block in the first interpolation visual frame" as claimed is vague and indefinite in that it is unclear what is being claimed in general. In addition, "the vector displacement estimation"

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shows no clear antecedent basis, and it is unsure what is meant by “to thereby induce the pixel value of every visual block in the first interpolation visual frame” as claimed;

(8) claim 3, lines 8-10, the phrase “creating a second interpolation visual frame ... of the first and the second visual frame” as claimed is vague and indefinite in that it is unclear how the second interpolation visual frame is created as claimed. In addition, it is unclear what is meant by “having its pixel value of each visual blocks induced basing on the mean pixel value of the first and the second visual frame” as claimed;

(9) claim 4, line 1, “media” should be changed to “median” in order to provide proper antecedent basis for the same as specified at claim 1, line 13;

(10) claim 4, line 8, “after operation” is redundant and therefore should be deleted; and

(11) claim 5, line 5, it is unclear what the “article” as claimed is referring to.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama (5,089,889) in view of Zhang et al (US 2003/0086496 A1).

Due to the indefiniteness of the claims as pointed out in the above paragraph (1), the Examiner wants to point out that the claims are being read in the broadest sense.

Sugiyama discloses an apparatus for interframe predictive encoding of video signal as shown in Figures 1, 3, and 4, and substantially the same method for promoting temporal resolution of sequential images as claimed in claims 1, 2, and 5, comprising substantially the

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same choosing a first visual frame of a train of sequential images and splitting it into a plurality of visual blocks according to a predetermined value (see column 1, lines 21-32, column 8, lines 23-62, column 12, lines 60-67); choosing a second visual frame of the train of sequential images (see column 1, lines 21-32, column 8, lines 23-62, column 12, lines 60-67) ; searching the second visual frame for mostly resembling respective visual blocks corresponding to every visual block in the first visual frame (i.e., as provided by interframe prediction section 21 of Figure 3, see column 9, lines 10-58; rebuilding a visual frame and estimate the respective pixel values of respective corresponding visual blocks of the first and the second visual frame at a time point and combining the pixel values of visual blocks to create the rebuilt visual frame (i.e., as provided by motion compensation, see column 12, lines 60-67); applying a median-value-filtering procedure upon the rebuilt visual frame (i.e., 32, 34 of Figure 4, and see column 10, line 41 to column 11, line 4); applying a spatial low-pass filtering procedure upon the rebuilt visual frame, which has undergone the previous procedure (i.e., 31, 33 of Figure 4, and see column 10, line 41 to column 11, line 4); wherein the first visual frame is the current visual frame and the second visual frame is a past visual frame previous to the current one (see column 9, lines 10-58); dividing the visual blocks of the rebuilt visual frame after motion compensation into a first and a second visual block set and performing a median-value-filtering procedure to the first visual block set (i.e., as provided by 32, 34 of Figure 4, see column 10, line 41 to column 11, line 4, column 12, lines 60-67), wherein the first visual block set is variable basing on image movement of article in the visual frames incurred by the blocks in the first and the second visual frame (i.e., interframe processing, see column 9, lines 10-68), and the

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second visual block set is a block set without variation of corresponding visual blocks in the first and the second visual frame (i.e., intraframe processing, see column 1, lines 29-31).

Sugiyama does not particularly disclose, though, estimating the vector displacement of respective corresponding visual blocks of the first and the second visual frame and rebuilding a visual frame according to the vector displacement as claimed in claim 1. It is noted that Sugiyama does teach the particular use of interframe predictor 21 for outputting motion compensation or prediction error value (see column 8, lines 43-47, column 12, lines 60-67). And, it is considered obvious that such motion compensation prediction involves the estimation of motion vectors. In any event, Zhang et al discloses a content based characterization of video frame sequences as shown in Figure 1, and teaches the conventional use of motion estimators for providing motion vectors to motion compensator in order to rebuild a frame according to the motion vectors (see section [0081] at pages 8-9). Therefore, it would have been obvious to one of ordinary skill in the art, having the Sugiyama and Zhang et al references in front of him/her and the general knowledge of motion estimators and motion compensators, would have had no difficulty in providing the motion estimator producing vector displacements as taught by Zhang et al for the interframe predictor 21 of Sugiyama so that the motion compensator could rebuild a visual frame purposes as claimed.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama and Zhang et al as applied to claims 1, 2, and 5 in the above paragraph (3), and further in view of Lee et al (US 2002/0036705 A1).

The combination of Sugiyama and Zhang et al discloses substantially the same method for promoting temporal resolution of sequential images as above, but does not particularly

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disclose wherein the rebuilding a visual frame comprises creating a first interpolation visual frame basing on the vector displacement estimation of the corresponding visual blocks in the first interpolation visual frame and the first visual frame and that in the first interpolation visual frame and the second visual frame to thereby induce the pixel value of every visual block in the first interpolation visual frame; creating a second interpolation visual frame having its pixel value of each visual blocks induced basing on the mean pixel value of the first and the second visual frame; and creating the rebuilt visual frame, which is composed of the mean pixel value of each visual block in the first and the second interpolation visual frame as claimed in claim 3.

However, Lee et al disclose a format converter as shown in Figures 1 and 9, and teaches the conventional use of motion compensation interpolators involving the interpolating of mean of blocks in the previous and the next frame of the frame to be interpolated, thereby producing/creating a rebuilt visual frame. Therefore, it would have been obvious to one of ordinary skill in the art, having the Sugiyama, Zhang et al, and Lee et al references in front of him/her and the general knowledge of motion compensation interpolators, would have had no difficulty in providing the motion compensator interpolator of Lee et al as the specific motion compensator within Sugiyama in order to produce interpolation visual frames for creating a rebuilt visual frame purposes as claimed.

5. Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

DeHaan et al (5,280,350; 5,072,293), May, Thomas, Astle, and Handjojo et al disclose various types of video processing systems.

7. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

or faxed to:


(703) 872-9314, (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.

  
RICHARD LEE  
PRIMARY EXAMINER

Richard Lee/rl

8/27/04

